

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-8, 10 and 12-15 are presently pending in this application, Claims 1 and 13 having been amended by the present amendment.

In the outstanding Office Action, Claims 1, 2, 4, 7, 10 and 12-15 were rejected under 35 U.S.C. §102(e) as being anticipated by Nakano et al. (U.S. Patent 6,416,578); Claims 1-3, 10 and 12-15 were rejected under 35 U.S.C. §102(b) as being anticipated by Kobashi et al. (U.S. Patent 5,923,054); and Claims 1-3, 5, 6 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by Davis et al. (U.S. Patent 6,051,849).

Claims 1 and 13 have been amended herein, and these claim amendments are believed to be clearly supported by the original disclosure of the present application, for example, the specification, paragraph [0032]. Thus, no new matter is believed to be added thereby. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive a mutually satisfactory solution.

Briefly, Claim 1 as currently amended is directed to a substrate comprised of a compound single crystal having a surface. The surface has a basal plane portion and at least one polar plane portion on the same face of the compound single crystal, and is substantially without polar plane portions having a surface energy lower than a surface energy of the basal plane portion. The basal plane portion is nonpolar, and the at least one polar plane portion has polarity and a surface energy higher than the surface energy of the basal plane portion. By providing such a substrate, the polar plane portion having a higher surface energy is filled

during the growth of a compound single crystal over the surface, and the compound single crystal thus obtained is substantially free from surface irregularities.¹

Nakano et al. is related to a method of manufacturing a silicon carbide film.

Nevertheless, Nakano et al. fails to teach “a compound single crystal having a surface, said surface having a basal plane portion and at least one polar plane portion on a same face of the compound single crystal, and being substantially without polar plane portions having a surface energy lower than a surface energy of said basal plane portion” as recited in amended Claim 1. On the other hand, Nakano et al. simply describes a single crystal substrate having a surface provided with undulations, and the polar plane portions formed by the undulations are orthogonal to the basal plane of the crystal, and not located on the same face of the crystal. Furthermore, according to amended Claim 1, the substrate surface has substantially no polar plane portion having a lower surface energy than the basal plane portion, whereas the Nakano et al. substrate seems to include such defects on the surface thereof as stated in the Office Action, page 4, item 6. Hence, the substrate of Claim 1 is believed to be clearly distinguishable from Nakano et al.

Kobashi et al. and Davis et al. are directed to a light emitting diode and a gallium nitride semiconductor structure, respectively. However, neither Kobashi et al. nor Davis et al. teaches “a compound single crystal having a surface, said surface having a basal plane portion and at least one polar plane portion on a same face of the compound single crystal, and being substantially without polar plane portions having a surface energy lower than a surface energy of said basal plane portion” as recited in amended Claim 1. Specifically, Kobashi et al. simply describes a light emitting diode comprised of an epitaxial wafer grown on a compound single crystal substrate, and Davis et al. merely discusses a semiconductor

¹ See, for example, specification, paragraphs [0017] and [0022]-[0025].

structure having a gallium nitride layer grown over a silicon carbide substrate. As discussed above, the substrate recited in amended Claim 1 includes substantially no polar plane portion having a lower surface energy, but the Kobashi et al. and Davis et al. substrates are believed to exhibit defects with lower surface energies as stated in the Office Action, page 3, lines 1-6. Therefore, Claim 1 is believed to be clearly distinguishable from Kobashi et al. and Davis et al.

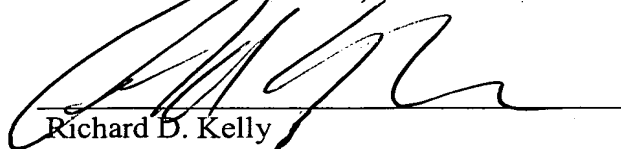
Likewise, Claim 13 includes subject matter substantially similar to what is recited in Claim 1 to the extent discussed above. Thus, Claim 13 is also distinguishable from Nakano et al., Kobashi et al. and Davis et al.

For the foregoing reasons, Claims 1 and 13 are believed to be allowable. Furthermore, since Claims 2-8, 10, 14 and 15 depend from either Claim 1 or 13, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2-8, 10, 14 and 15 are believed to be allowable as well.

In view of the amendments and discussions presented above, the present application is believed to be in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Richard D. Kelly
Registration No. 27,757
Attorney of Record

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)

Akihiro Yamazaki
Registration No. 46,155

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